STEP/SC4 Industrial Data Framework

- Items
  - STEP/SC4 Industrial Data Framework
  - Quick Comparison with Ship Common Model
  - Quick demo of Catalogue

SSID - Agenda

- Progress
- What is it?
- What does it consist of?

- Industrial Reference Models
- Data Framework
- Guidelines

- Summary

SSIS Progress

- WG10 action to develop a STEP/SC4 Industrial Data Framework based on the work from Chris Vaughan and Yoshiaki Ishikawa
- Created a first draft of this
  - Requires input from Y Ishikawa
  - For review at Lillihammer

STEP/SC4 Industrial Data Framework

- What is it?
  - Top down view
  - Proposed fundamental structure for industrial data and industrial data standards
  - Fundamental tenets:
    - Fundamental commonalties between different industries
    - All Industrial data is a product of some industrial process and therefore subject to a generalised product life cycle.
  - Still under development and is therefore subject to change
- What is the problem being addressed?
  - A framework for developing STEP Application Modules and Protocols
    - Most STEP information models are of good quality
    - Insufficient work to ensure (top-down) interoperability.
  - Identifying and scoping product models and the major relationships between them
  - Structure for product model catalogues and libraries.

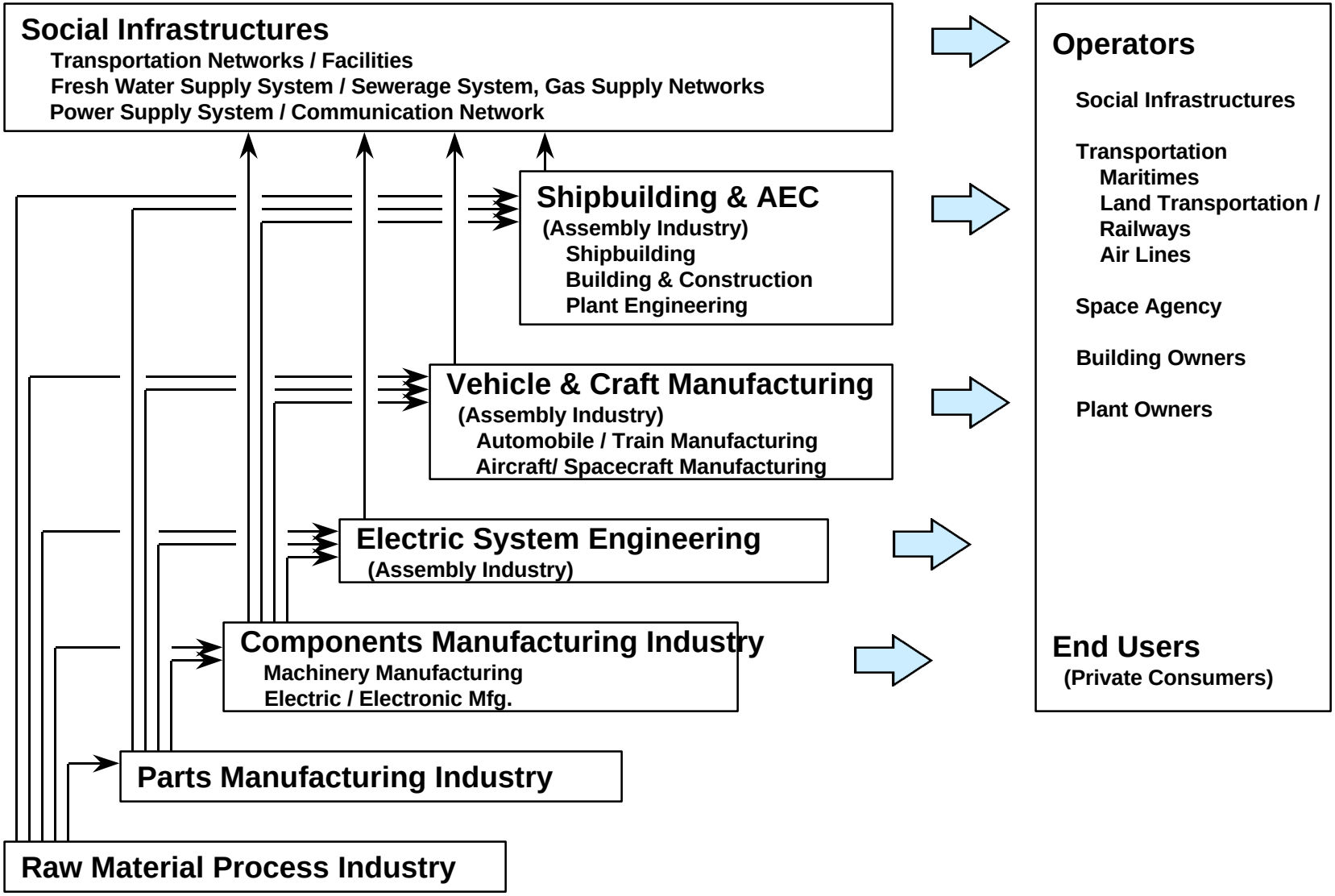
Consists of

- Industrial Reference Models
  - Informative models that describe the industrial environment
    - Industrial Structure Reference Model
    - Product Life Cycle (PLC) Reference Model
- A Framework
  - basic data concepts modelled in STEP that support the concepts in the Industrial Reference Models.
    - Industrial Information Model
    - Product Data Backbone
- Guidelines for standards developers
  - to ensure conformance to the framework and provide criteria for assessment of PWI/NWI Proposals

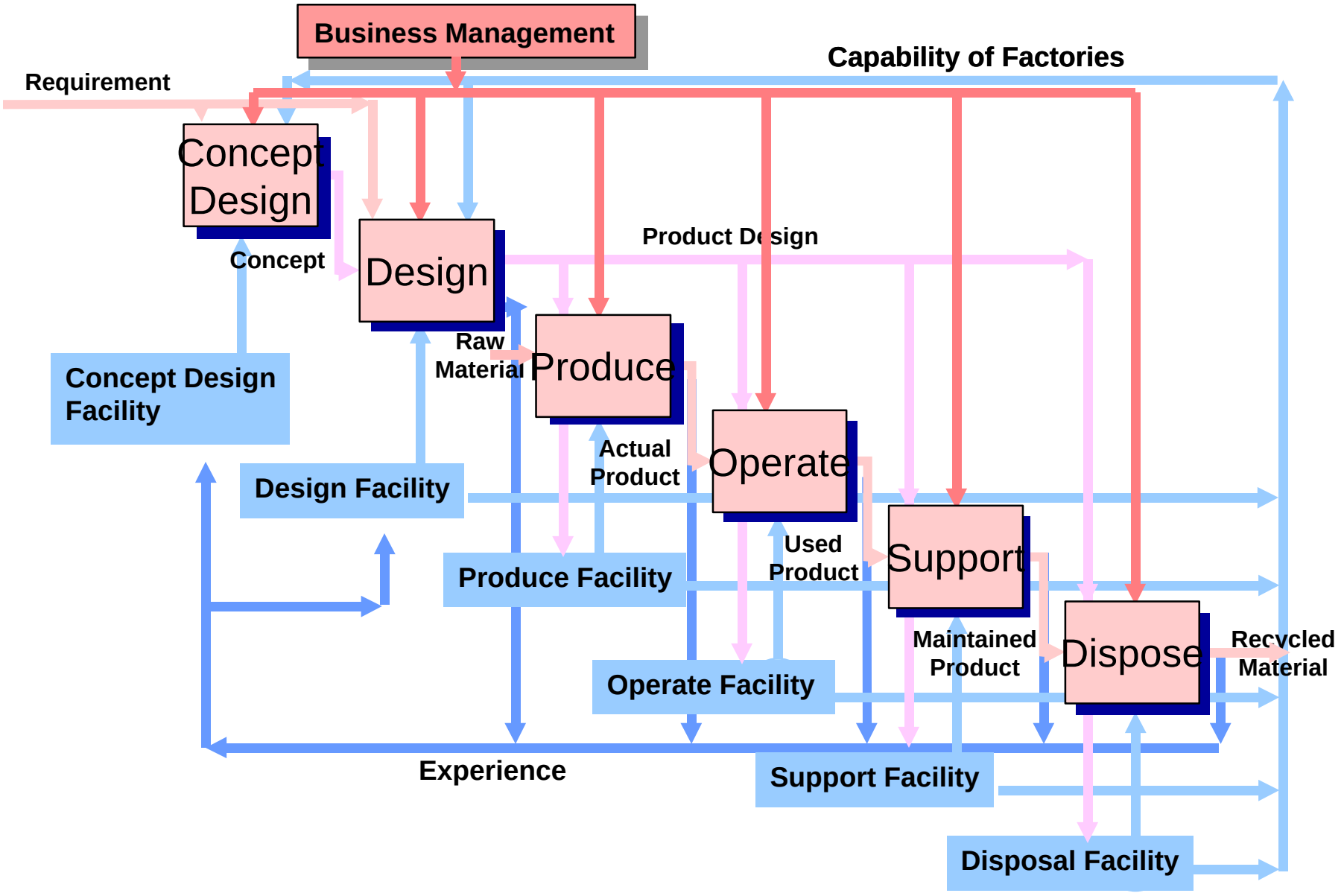
Industrial Reference Models

- Industrial Structure
- Levels of Process
- IDEF0
- Product Life Cycle
- Types of Data within PLC

Industrial Structure Reference Model



Product Life Cycle Reference Model



Types of Data within the PLC

- There are only four different types of information flow
  - Business
  - Product Requirements
  - Product Design
  - Actual Product

- Experience, the Factories and Capabilities of Factories are all information about products
  - where Product=Factory
  - Product Requirements
  - Product Design
  - Actual Product

Data Framework

- Major Relationships
  - Product, Properties, Representation and Presentation
  - State and Properties
  - etc
- Industrial Information Model (IIM)
- Mapping Concepts to the IIM
- Data Backbone
- Key Features of the Data Backbone

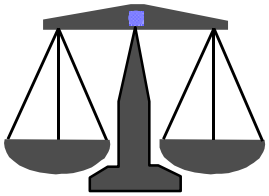
Product, Properties, Representation and Presentation

Product Data

Identifies the product

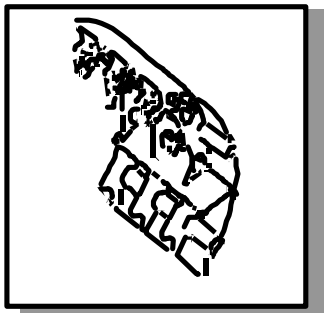
Properties

Defines attributes of the product



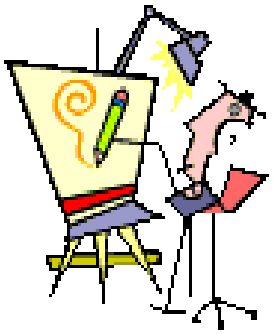
Representation Data

Represents a property of the product



Presentation Data

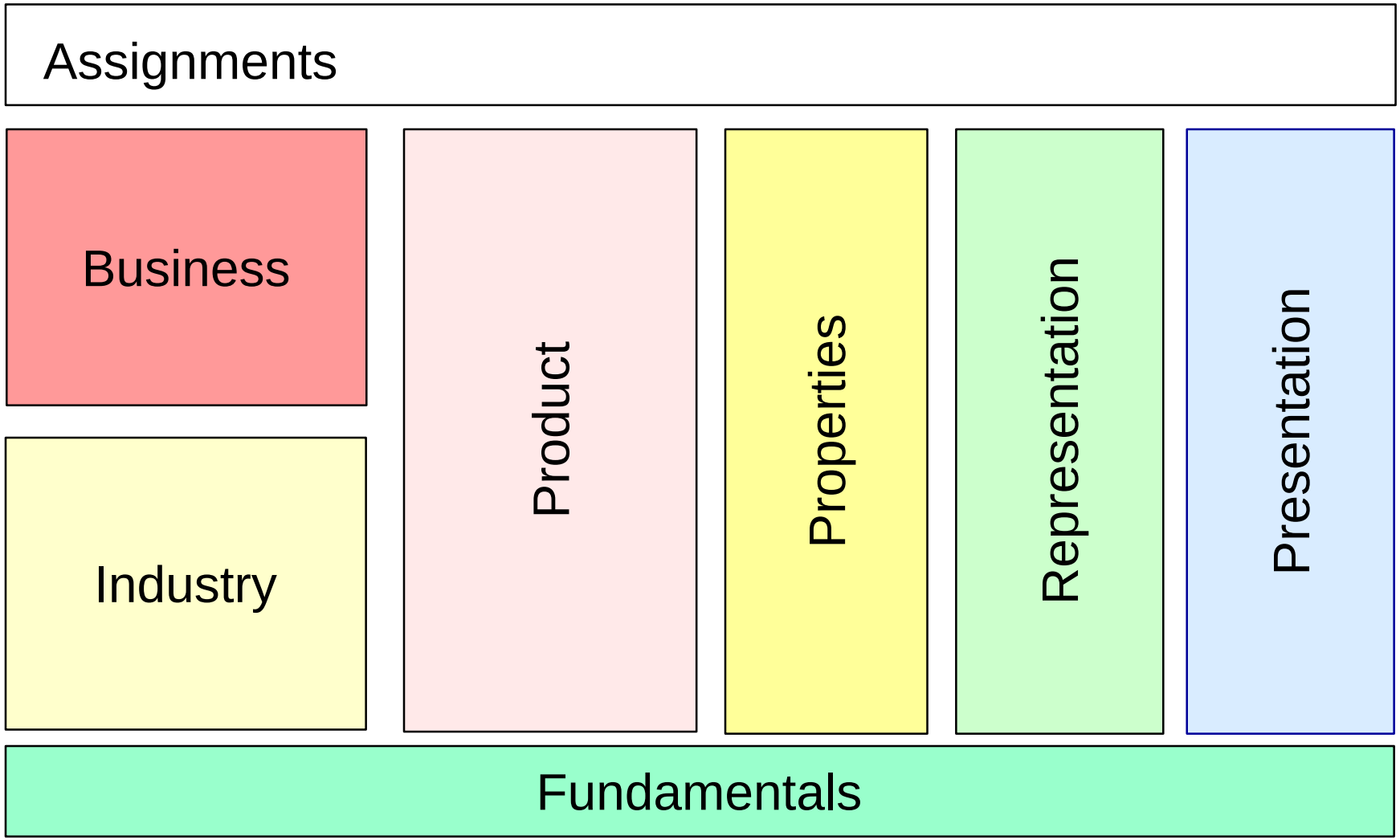
Defines how to present the data



Examples

Product	Shape	Wireframes Surfaces Solids	Views Layers Colours Groups
	Behaviour	Analytical Model	
	Fracture toughness	Numeric value with uncertainty	Decimal number

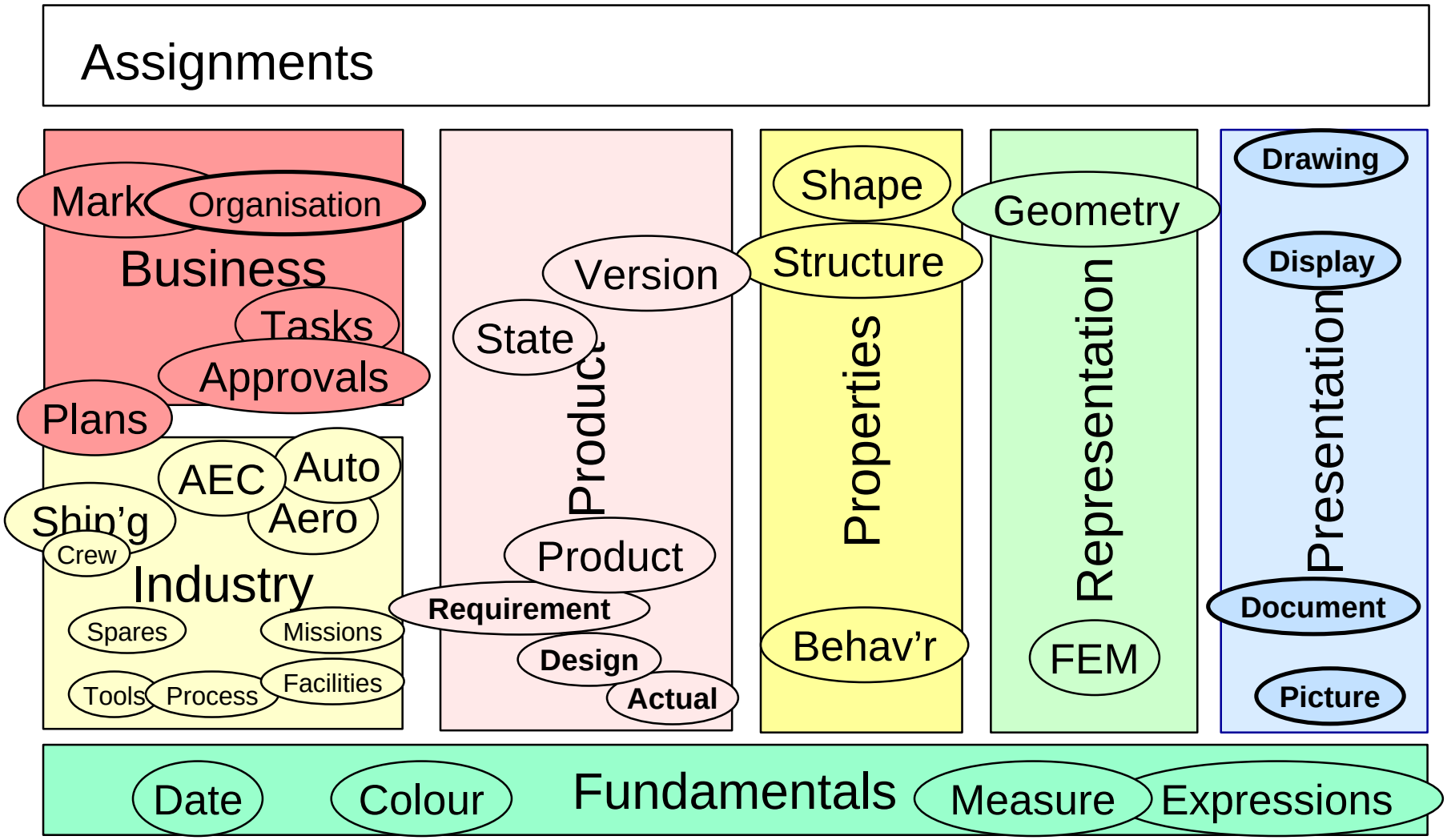
Industrial Information Model



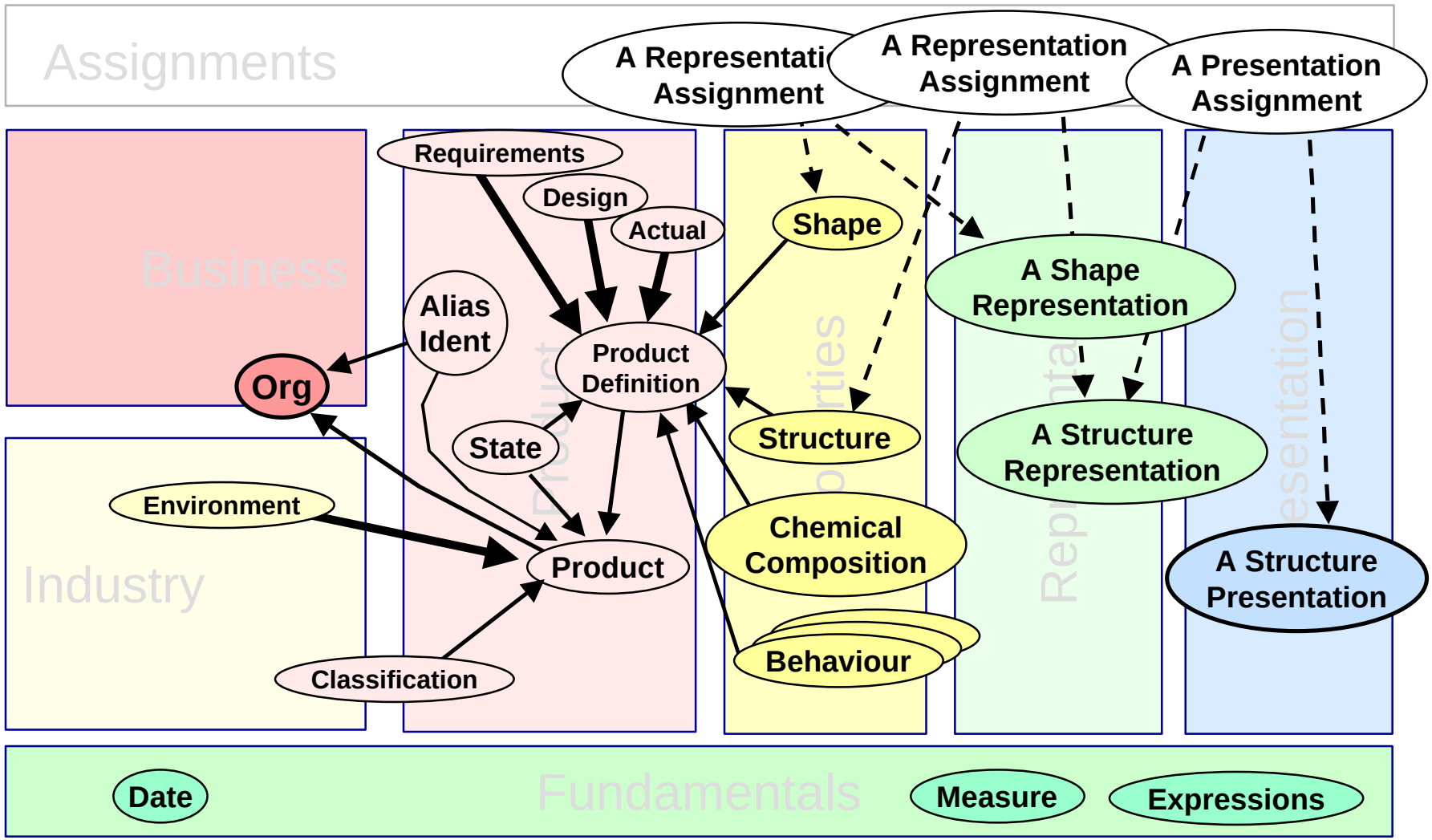
Industrial Information Model - Categories

Business :	– information types that control or constrain for the Product Life-cycle processes.
Industry :	– information types specific to particular industry sectors or product types.
Product data :	– information types that are valid for ALL products.
Properties :	– concepts that characterise a thing or a product. e.g. Shape, structure, particular behaviour (e.g. thermal)
Representation :	– various ways of representing the properties of a product
Presentation :	– ways of displaying or presenting information to people.
Assignments :	– concepts that allow the others to be linked together to satisfy an industrial need.
Fundamentals :	– concepts that apply across most of the other groups and even perhaps to non-Product data.

Industrial Information Model - Example



Product Data - Backbone



Key Features of the Data Backbone

- Aimed at supporting any Product or Industry sector
- Proposes a single backbone of concepts / modules for ALL APs
- Proposes the concepts of
  - ***Requirements, Design*** and ***Actual Product***
  - The separation of ***Properties, Representations*** and ***Presentation*** forms to allow
    - industry to decide the level of technology to be used
    - reuse of modules
  - Proposes a standard assignment modules between
    - ***Properties*** and their ***Representation***
    - ***Representations*** and any ***Presentational*** definitions
  - Allows new properties, representation and presentations to be added
  - Can be used to review scope of new modules

Industrial Framework Model - Summary

- Some progress since San Francisco.
- First draft
  - available on http://wg10step.aticorp.org/Deliverables/Framework/SSID
  - Set up as a set of web pages
  - Feedback form available to log comments / issues
  - Will be reviewed at Lillihammer
- Using the framework in Enhance
  - EC funded, 3 year project
  - European Aerospace, concurrent engineering
  - COPROMOD - Common Product Model Data